Arboricultural Impact Assessment

Prepared For:	Smart Town Planning
Site Address:	25 Liege Avenue, Noble Park Vic 3174
Report Date:	Monday, 19 August 2024
Version:	0.1

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1 EXECUTIVE SUMMARY

1.1 KEY REPORT CONCLUSIONS & RECOMMENDATIONS

I. ALL LOW VALUE TREES WITHIN THE SITE ARE PROPOSED TO BE REMOVED, NO PERMITS ARE REQUIRED (***7.3***).

II. LOCAL LAW PERMIT REQUIREMENTS APPLY TO NEIGHBOURING TREE 10 (***6.2.4***).

III. THE MARGINAL MAJOR ENCROACHMENT INTO THE TPZ OF NEIGHBOURING TREE 9 IS EXPECTED TO BE TOLERATED (***6.3.3.6***).

IV. THE PARKING AREA WITHIN THE TPZ OF TREE 10 SHOULD BE CONSTRUCTED FROM A PERMEABLE MATERIAL AND ANY REQUIRED SITE SCRAPE (< 50 MM) SHOULD BE SUPERVISED BY A SUITABLY QUALIFIED ARBORIST (***7.4.1***).

V. TREE PROTECTION FENCING (***7.4.4***) AND GROUND PROTECTION (***7.4.5***) WILL BE REQUIRED FOR THE TREES THAT ARE TO BE RETAINED, LOCATIONS TO BE DETERMINED WITHIN A TREE PROTECTION MANAGEMENT PLAN (***7.4.2***).

1.2 TREE RETENTION/REMOVAL MATRIX

		TREE RETENTION VALUE				
	TOTAL	**COUNCIL**	**NEIGHBOURING**	**LOW**	**MODERATE**	**HIGH**
TOTAL	**10**	**1**	**2**	**7**	**0**	**0**
RETAIN	**3**	1	2	0	NA	NA
REMOVE	**7**	0	0	7	NA	NA

TABLE OF REPORT CONTENTS

2 IMPACT ASSESSMENT DETAILS

2.1 VERSION CONTROL

Version	Date	Author
0.1	Monday, 19 August 2024	Ben Thomas

2.2 CONSULTING ARBORIST DETAILS

Name: Ben Thomas

Company: T&T ARBORICULTURE

ABN: 69527133247

Qualifications: MSc in Arboriculture & Urban Forestry

University of Central Lancashire, U.K. (2024)

Graduate Certificate in Arboriculture

University of Melbourne, Aus. (2017)

HNC in Woodland Management & Arboriculture (AQF level 5 eqv.)

Bangor University, U.K. (2012)

VALID, QTRA & TRAQ Risk Assessment Certified

Qualification requirements as per AS 4970-2009

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2.3 CLIENT & SUBJECT SITE DETAILS

Client Name: Smart Town Planning

Site Address: 25 Liege Avenue, Noble Park Vic 3174

Date of Assessment: Friday, 16 February 2024

Date of Report: Monday, 19 August 2024

2.4 BRIEF

This report provides an independent arboricultural assessment of prominent trees that are located within the subject site and within approx. five (5) metres of the site boundary lines.

Detail has been requested in relation to the following instructions:

- To provide an objective assessment of the overall condition of the subject trees.
- To provide an objective assessment of the retention value of the subject trees.
- To determine the Tree Protection Zones (TPZ) and Structural Root Zones (SRZ) of the subject trees.
- To determine which tree(s) (if any) are subject to any permit requirements.
- To determine if the subject trees are expected to remain viable as a result of the proposed development.
- To propose recommendations that are expected to ensure that the subject trees (to be retained) would remain viable post development.

For consideration by;

- Property / Tree Owner.
- Development Project Team.
- Council Planning Department.

3 DATA COLLECTION

3.1 SITE VISIT

Data collected by Consulting Arborist Ben Thomas of T&T Arboriculture at subject site on date specified in CLIENT & SUBJECT SITE DETAILS ***(2.3)***.

3.2 SITE DESCRIPTION

The local council is Greater Dandenong City Council.

The following zoning and overlays apply to the site (Landchecker, 2023):

- GRZ - General Residential Zone - Schedule 1

There is currently a residential dwelling and outbuilding located within the site.

The terrain of the site presented as predominantly flat.

The subject trees are located within the subject site, council nature strip (front) and adjoining properties;

- 2 Maxine Court
- 27 Liege Avenue

No additional prominent vegetation was observed within five (5) metres of the site boundary lines.

3.3 DATA COLLECTION

3.3.1 REFERENCED DOCUMENTS

Site Survey – Next Level Surveying (05/06/2023)

Proposed Plans – Smart Town Planning; Rev. A (29/07/2024)

Greater Dandenong City Council RFI – PLN23/0555 (16/01/2024)

Greater Dandenong City Council Planning Scheme

Australian Standard AS4970 – 2009 'Protection of Trees on Development Sites'

Australian Standard AS4373 – 2007 'Pruning of Amenity Trees'

Bibliography & References ***(8)***

3.3.2 PROPOSED PLAN

The proposed plan referenced in this report may be subject to change.

Trees have been mapped in the locations as per the site survey.

3.3.3 METHOD OF DATA COLLECTION

For the purposes of this report, a 'tree' is considered to be free-standing vegetation, approx. three (3) meters or above in height.

Access to neighbouring properties was restricted, assessment was therefore limited only to parts of the trees that were visible from within the subject site and any neighbouring tree dimensions are estimated.

The subject trees were assessed from observations made as viewed from ground level and canopy spread has been estimated.

A circumference tape measure was used to determine the trunk dimensions of trees accessible at the time of assessment, unless stated otherwise.

A digital camera was used at ground level to obtain photographs within this report, unless stated otherwise.

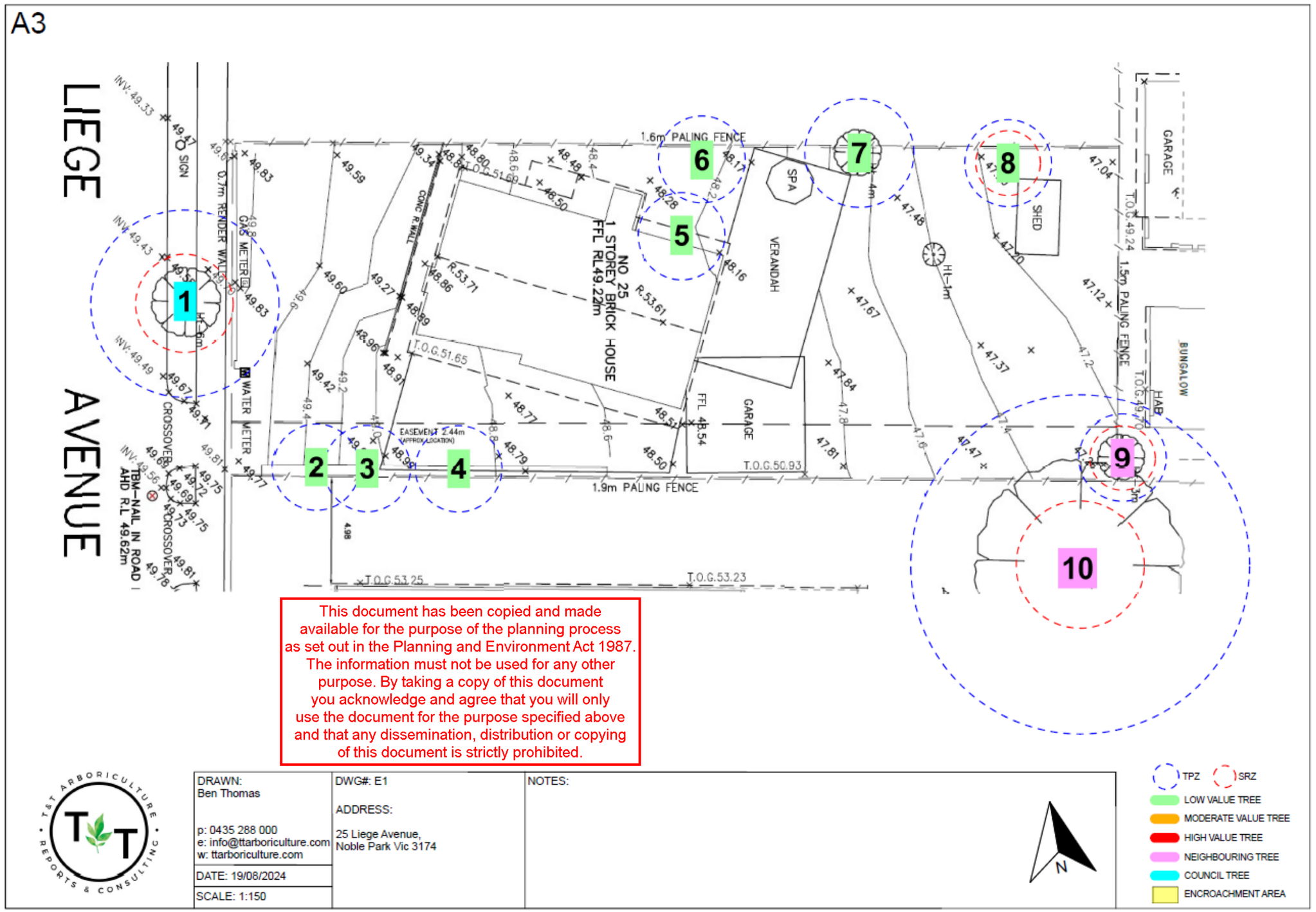
The height of the trees was measured by using a Nikon Forestry Pro Laser Range Finder.

Encroachment percentages have been calculated via ArborCAD V9 (CAD International).

4 SITE MAPS

4.1 EXISTING SITE

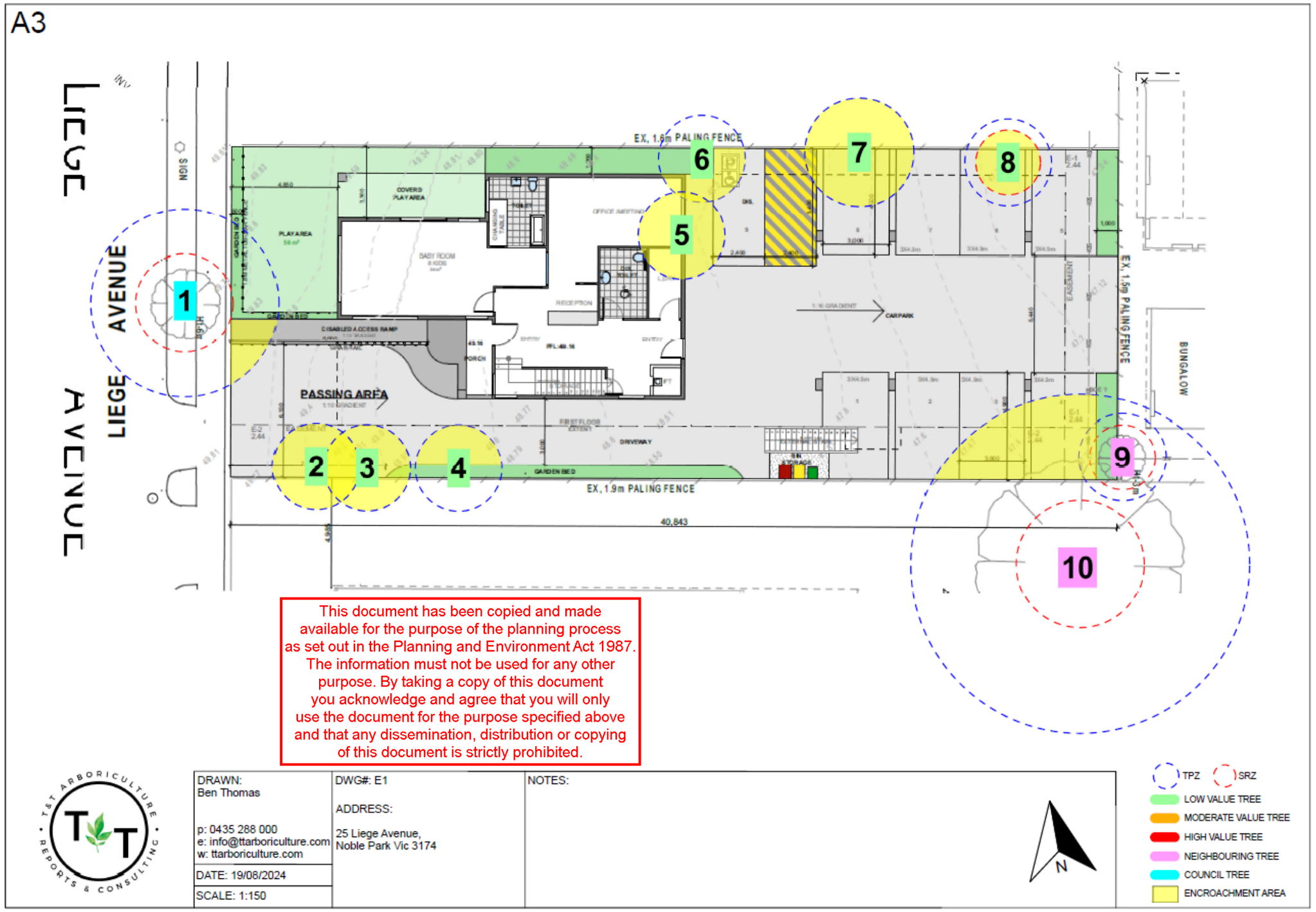
A3



DRAWN: Ben Thomas p: 0435 288 000 e: info@ttarboriculture.com w: ttarboriculture.com	DWG#: E1 ADDRESS: 25 Liege Avenue, Noble Park Vic 3174	NOTES:
DATE: 19/08/2024		
SCALE: 1:150		

TPZ
SRZ
LOW VALUE TREE
MODERATE VALUE TREE
HIGH VALUE TREE
NEIGHBOURING TREE
COUNCIL TREE
ENCROACHMENT AREA

4.2 PROPOSED PLAN



5 DISCUSSION

5.1 TREE PROTECTION ZONE

Australian standard definition (2009) - *A specified area above and below ground and at a given distance from the trunk set aside for the protection of a tree's roots and crown to provide for the viability and stability of a tree to be retained where it is potentially subject to damage by development.*

In accordance with the Australian Standard, AS4970-2009 'Protection of Trees on Development Sites', the Tree Protection Zone (TPZ) is determined by multiplying the trunk Diameter of the tree at Breast Height (DBH), which is at 1.4 meters above ground level, by a factor of twelve (12) i.e., *TPZ radius = DBH x 12*.

The minimum TPZ radius that must apply is 2.0 meters whilst the maximum is 15.0 meters.

Section 3.2 within the Standard states that the TPZ of Palms, other monocots, cycads and tree ferns should not be less than 1 m outside the crown projection.

5.2 STRUCTURAL ROOT ZONE

Australian standard definition (2009) - *The area around the base of a tree required for the tree's stability in the ground. The woody root growth and soil cohesion in this area are necessary to hold the tree upright. The SRZ is nominally circular with the trunk at its centre and is expressed by its radius in metres. This zone considers a tree's structural stability only, not the root zone required for a tree's vigour and long-term viability, which will usually be a much larger area.*

The structural root zone (SRZ) is the setback required to avoid damage to stabilising structural roots. The loss of roots within the SRZ must be avoided. The SRZ is determined by applying the following formula: $(D \times 50)^{0.42} \times 0.64$, where D = trunk diameter in metres measured above the root buttress.

The minimum SRZ radius that must apply is 1.5 meters.

Palms, other monocots, cycads and tree ferns do not require an allocated SRZ due to their root architecture.

5.3 DESIGNING AROUND TREES

The following is extracted from Section 3.3 of the Australian Standards AS4970-2009 'Protection of Trees on Development Sites'.

It may be possible to encroach into or make variations to the TPZ of the trees that must be retained. Encroachment includes excavation, compacted fill and machine trenching.

5.3.1 MINOR ENCROACHMENT

If the proposed encroachment is less than 10% of the area of the TPZ and is outside the SRZ, detailed root investigations should not be required. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ. Variations must be made by the project arborist considering relevant factors.

5.3.2 MAJOR ENCROACHMENT

If the proposed encroachment is greater than 10% of the TPZ or inside the SRZ the project arborist must demonstrate that the tree(s) would remain viable. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ. This may require root investigation by non-destructive methods and consideration of relevant factors.

5.3.3 TPZ ENCROACHMENT CONSIDERATIONS

When determining the potential impacts of encroachment into the TPZ, the project arborist should consider the following:

- *Location and distribution of the roots to be determined through non-destructive investigation methods (pneumatic, hydraulic, hand digging or ground penetrating radar). Photographs should be taken and a root zone map prepared.*

NOTE: Regardless of the method, roots must not be cut, bruised or frayed during the process.

- *It is imperative that exposed roots are kept moist and the excavation back filled as soon as possible.*
- *The potential loss of root mass resulting from the encroachment: number and size of roots.*
- *Tree species and tolerance to root disturbance.*
- *Age, vigour and size of the tree.*
- *Lean and stability of the tree.*

NOTE: Roots on the tension side are likely to be most important for supporting the tree and are likely to extend for a greater distance.

- *Soil characteristics and volume, topography and drainage.*
- *The presence of existing or past structures or obstacles affecting root growth.*
- *Design factors.*

Tree sensitive construction measures such as pier and beam, suspended slabs, cantilevered building sections, screw piles and contiguous piling can minimize the impact of encroachment.

5.4 CALCULATING ENCROACHMENTS

Encroachment calculations are indicative only as they do not consider over excavations during development or asymmetric root architecture. Due to the highly modified nature of urban soils and the likely presence of existing structures and utilities, root architecture will be rarely symmetrical or conventional in morphology.

Due to typical, radiating root architecture, 'overlaps' are accounted for in instances where there is an area of expected root development beyond the footprint of a proposed encroachment feature (e.g., building, site cut, utility, etc.) that will also be affected (figure 1). In many instances, this will increase the encroachment percentage beyond that of the immediate footprint and this must be accounted for when proposing works within the TPZ.

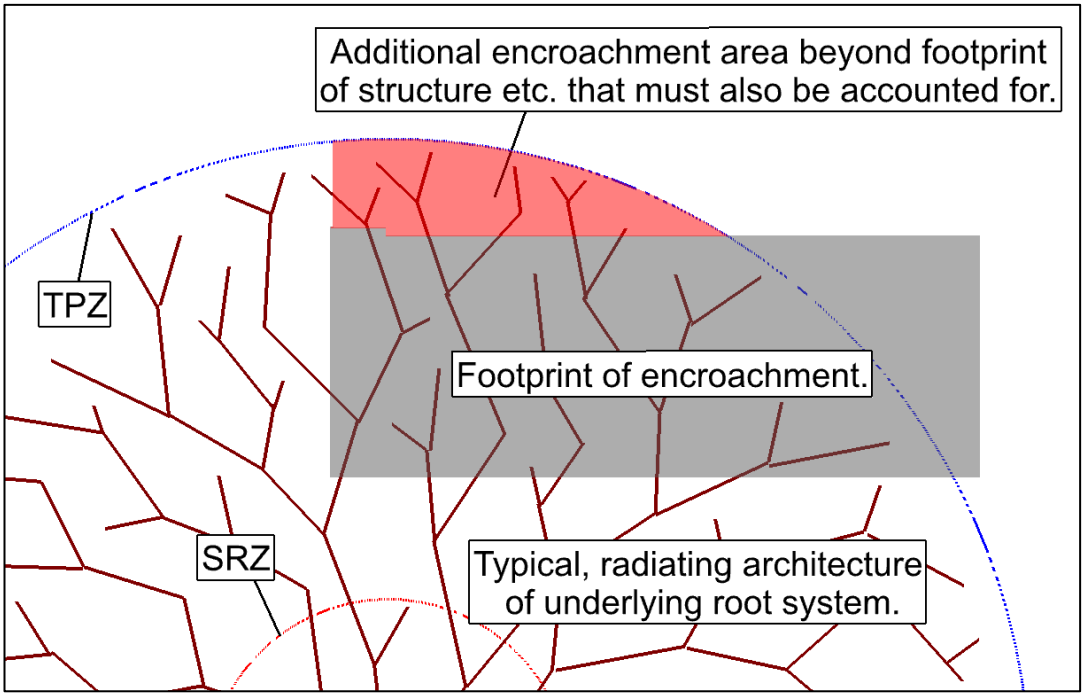


Figure 1. Indicative illustration of instances where the TPZ area beyond the footprint of an encroachment must be accounted for.

6 CONCLUSION

6.1 RETENTION VALUE

Refer to TREE RETENTION VALUE ***(10.2.5)*** for retention value attributes.

6.1.1 COUNCIL OWNED TREES

There is 1 TREE considered to belong to Greater Dandenong City Council.

TREE 1

6.1.2 NEIGHBOURING TREES

There are 2 TREES considered to be within neighbouring properties.

TREES 9 & 10

6.1.3 LOW RETENTION VALUE

There are 7 TREES of low retention value within the site.

TREES 2 – 8

6.1.4 MODERATE RETENTION VALUE

There are no moderate value trees within the subject site.

6.1.5 HIGH RETENTION VALUE

There are no high value trees within the subject site.

6.2 PERMIT REQUIREMENTS

6.2.1 LOCAL LAW

The site is subject to the following local law in regard to tree protection.

PERMIT REQUIREMENT

A person must not without a permit:

- remove, damage, kill or destroy, or lop a Protected Tree; or
- direct, authorise or allow a Protected Tree to be removed, damaged, killed, destroyed, or lopped.
- cut, trim, lop or prune any protected tree or allow to be cut, trimmed, lopped or pruned any protected tree contrary to the guidelines recommended in the Australian Standard AS 4373-2007 Pruning of amenity trees.

PROTECTED TREE:

Means a tree with a stem diameter equal to or greater than 40 cm measured at 1.4 meters above ground level. The diameter of trees with multiple stems is calculated in accordance with Australian Standard AS 4970–2009 Protection of trees on development sites. The definition includes exotic species but excludes species that are declared Noxious Weeds under the Catchment and Land Protections Act 1994.

Where a tree has been removed without a permit, for enforcement purposes a Protected Tree is a tree with a stump diameter equal to or greater than 50 cm at ground level.

EXEMPTIONS

A permit is not required under this Local Law:

- if the removal of a tree requires a permit under the Greater Dandenong Planning Scheme and a permit has been obtained; or
- if works are pruning only, and undertaken by a minimum AQF level 3 arborist and in accordance with AS 4373–2007 Pruning of amenity trees; or
- if the owner of the private property has notified Council that a protected tree or part of a protected tree poses an immediate risk to people or property and has been assessed by a minimum AQF level 5 arborist, with removal being the only option to mitigate the risk; or
- the tree is a Salix ssp. (Willow) declared a Noxious Weed under the Catchment and Land Protections Act 1994.

6.2.2 OVERLAYS

The site is not subject to any overlays in regard to tree protection.

6.2.3 STREET TREE POLICY

The following is publicly available information that has been extracted from local council resources. Despite efforts to include all relevant text, some information may be incomplete and additional comments may be provided by the local council in relation to public owned trees and vehicle crossovers.

6.2.3.1 VEHICLE CROSSING

Council Street Trees Proposed crossings to be constructed 3.0 m clear from existing street tree greater than 100 mm diameter and 2.0 m clear of tree less than 100 mm diameter, this may be subject to tree protection conditions. The applicant is to seek advice from the Council Arborist prior to applying for a permit.

Service Authority poles, hydrants and other raised/fixed objects or roadside furniture are to have a minimum clearance of 1.0 m from the nearest edge of the asset to the edge of the vehicle crossing.

6.2.4 TREES SUBJECT TO PERMIT REQUIREMENTS

6.2.4.1 COMMENTS

It is presumed that Council owned trees are to be retained and protected throughout the duration of the project, unless otherwise agreed upon.

6.2.4.2 TREES THAT REQUIRE A PERMIT

Tree(s) #	Applicable governance	Permit criteria
1	Council Owned Tree	Located within council land.
10	Local law	Trunk(s) =/> 40 cm diameter at 1.4 m above ground level.

6.2.4.3 TREES THAT DO NOT REQUIRE A PERMIT

Tree(s) #	Applicable governance	Permit criteria
2 – 9	Local law	Exempt – Do not meet the size criteria

6.3 IMPACT ASSESSMENT

6.3.1 TABLE OF PROPOSED DEVELOPMENT ENCROACHMENTS:

Tree No.	Encroachment type	TPZ encroachment	SRZ encroachment	Encroachment category	Proposed retention
1	Driveway	7.2%	0%	Minor	Retain
2	Driveway	Entire tree	Entire tree	Major	Remove
3	Driveway	Entire tree	Entire tree	Major	Remove
4	Driveway	45.6%	NA	Major	Remove
5	Building	Entire tree	Entire tree	Major	Remove
6	Parking	41.2%	NA	Major	Remove
7	Parking	Entire tree	Entire tree	Major	Remove
8	Parking	Entire tree	Entire tree	Major	Remove
9	Parking	14.4%	6.9%	Major	Retain
10	Parking	11.4%	0%	Major	Retain

6.3.2 MINOR ENCROACHMENT

The following tree is proposed to have **minor** *(5.3.1)* encroachments due to the proposed development:

TREE 1

The proposed development is not expected to compromise the health and/or structural integrity of the above tree(s).

Less invasive construction measures or development redesign is therefore not required as this tree is expected to remain viable post construction.

6.3.3 MAJOR ENCROACHMENT

The following trees are proposed to have **major** *(5.3.2)* encroachments due to the proposed development:

6.3.3.1 TREES 2 & 3

These trees are located within the proposed footprint of the DRIVEWAY.

These trees are required to be removed in order to construct the proposed development.

These trees are of low retention value.

There are no permit requirements that apply to these trees.

In the event of removal, less invasive construction measures or development redesign are not required.

6.3.3.2 TREE 4

The proposed footprint of the DRIVEWAY is considered to be a major encroachment (5.3.2) of 45.6% of the TPZ. No SRZ applies to this tree.

The construction of proposed development has the potential to compromise the tree's long-term viability.

This tree is of low retention value.

This tree is proposed to be removed.

There are no permit requirements that apply to this tree.

In the event of removal, less invasive construction measures or development redesign are not required.

6.3.3.3 TREE 5

The tree is located within the proposed footprint of the BUILDING.

The tree is required to be removed in order to construct the proposed development.

This tree is of low retention value.

There are no permit requirements that apply to this tree.

In the event of removal, less invasive construction measures or development redesign are not required.

6.3.3.4 TREE 6

The proposed footprint of the PARKING is considered to be a major encroachment (5.3.2) of 41.2% of the TPZ. No SRZ applies to this tree.

The construction of proposed development has the potential to compromise the tree's long-term viability.

This tree is of low retention value.

This tree is proposed to be removed.

There are no permit requirements that apply to this tree.

In the event of removal, less invasive construction measures or development redesign are not required.

6.3.3.5 TREES 7 & 8

These trees are located within the proposed footprint of the PARKING.

These trees are required to be removed in order to construct the proposed development.

These trees are of low retention value.

There are no permit requirements that apply to these trees.

In the event of removal, less invasive construction measures or development redesign are not required.

6.3.3.6 TREE 9

The proposed footprint of the PARKING is considered to be a major encroachment (5.3.2) of 14.4% of the TPZ and 6.9% of the SRZ.

This is a neighbouring tree that is proposed to be retained.

There are no permit requirements that apply to this tree.

Although this is considered to be a major encroachment, the tree is expected to remain viable due to the following:

- This is a hardy tree species that is expected to tolerates the degree of root disturbance.
- The parking surface is to be constructed close to natural ground level (see TREE 10).

Although a major encroachment within the TPZ, provided that recommendations within SECTION 7.4 are complied with, development redesign is not required to ensure that the tree would remain viable post construction.

6.3.3.7 TREE 10

The footprint of the PARKING is considered to be a major encroachment (5.3.2) of 11.4% of the TPZ and 0% of the SRZ.

This is a neighbouring tree that is proposed to be retained.

This tree is subject to permit requirements in accordance with local law.

The construction of the proposed development has the potential to compromise the tree's long-term viability.

Recommendations within SECTION 7.4 of this report are required to ensure that this tree would remain viable post construction.

7 RECOMMENDATIONS

7.1 TREE RETENTION/REMOVAL MATRIX

Total number of tree(s) to be retained or removed.

		TREE RETENTION VALUE				
	TOTAL	**COUNCIL**	**NEIGHBOURING**	**LOW**	**MODERATE**	**HIGH**
TOTAL	**10**	**1**	**2**	**7**	**0**	**0**
RETAIN	**3**	1	2	0	NA	NA
REMOVE	**7**	0	0	7	NA	NA

7.2 TREE RETENTION

Trees proposed to be retained as part of the project plans:

Tree #	**Retention Value** (6.1)	**Permit Requirements** (6.2)	**Tree Protection Measures** (7.4)
1	Council Owned Tree	Street Tree Policy	Tree Protection Fencing
9	Neighbouring Trees	Not subject to permit requirements	Existing boundary fence Ground Protection
10	Neighbouring Trees	Local law	Tree Protection Fencing Less invasive construction

The following is recommended in order to ensure that trees that are proposed to be retained would remain viable post construction:

- Comply with Construction & Tree Protection Measures (7.4).

7.3 TREE REMOVAL

Trees proposed to be removed as part of the project plans:

Tree #	**Retention Value** (6.1)	**Permit Requirements** (6.2)
2 – 8	Low	Not subject to permit requirements

In the event of tree removal, the following is recommended:

- Tree removal should be undertaken prior to construction commencing.

7.4 CONSTRUCTION & TREE PROTECTION MEASURES

7.4.1 PARKING (TREE 10)

Excavation should be limited to surface scraping for levelling purposes only (e.g., grass/turf layer only, no greater than 50 mm in depth) within the TPZ; a site cut or the importation of fill (soil) should be avoided.

Engage a suitably qualified arborist (AQF Level 5) to supervise any surface scraping within the TPZ.

Construct surface via permeable surface material which allows water and air to penetrate whilst also resisting compaction to the soil profile within the TPZ.

The existing soil must not be compacted.

7.4.2 TREE PROTECTION MANAGEMENT PLAN (TPMP)

To ensure the long term viability of trees which are to be retained and whether or not a planning requirement, a Tree Protection Management Plan (TPMP) prepared in accordance with AS4970-2009 'Protection of Trees on Development Sites', should be prepared by a suitably qualified and experienced Arborist in relation to the management and maintenance of all trees that are to be retained prior to the commencement of any works (including any demolition, levelling of the site, excavations, tree removal, delivery of building/construction materials and/or temporary buildings).

The Tree Protection Management Plan must make specific recommendations in accordance with the Australian Standard AS4970-2009 'Protection of Trees on Development Sites' to ensuring that the trees remain healthy and viable during the development.

7.4.3 PRUNING

Pruning of trees that are proposed to be retained (7.2) is not required for clearance purposes and should therefore not be undertaken.

If unforeseen pruning is required, only the minimum amount necessary for clearance in order to complete construction should be removed.

Pruning should be undertaken by a suitably qualified Arborist (minimum AQF level 3).

The pruning should be undertaken in accordance with the AS4373 – 2007 'Pruning of amenity trees'.

Pruning should be undertaken prior to machinery being brought onto site.

7.4.4 TREE PROTECTION FENCING (TREES 1, 9 & 10)

TPF should be installed as close to the TPZ as practically possible provided that it does not encroach onto the road, footpath, crossover or proposed works.

TPF should be installed prior to machinery being brought onsite for the demolition of existing structures or removal of vegetation.

TPF should be a minimum **1.8m high** and comprised of wire mesh (or similar) supported by concrete feet (or similar) (figure 2).

TPF should remain intact for the duration of the project unless substituted for GROUND PROTECTION as recommended by the project arborist.

The existing site perimeter fencing may be used as TPF for the remaining neighbouring trees.

TPF should only be removed or shifted with the approval of the Project Arborist and the Responsible Authority.

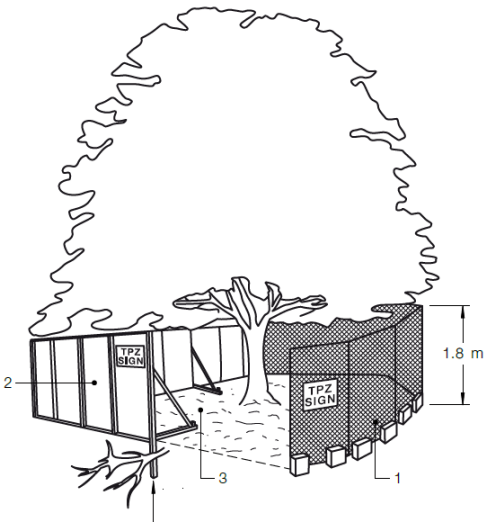


Figure 2. Tree Protection Fencing (Image from AS4970-2009)

The final location of TPF should be determined within a TPMP once the design has been finalised and all impacts accounted for. It is possible that TPF locations and requirements will differ between pre-demolition and pre-construction stages.

7.4.4.1 TREE PROTECTION SIGNAGE

The signage should be placed on TPZ fencing at regular intervals so that it is visible from any angle outside the TPZ.

Signage should state 'Tree Protection Zone, No Access' or similar (figure 3).

Signage should be greater than 600mm X 400mm in size.

The contact details of the project arborist and site manager should be written on the sign.

Figure 3. TPZ signage

7.4.5 GROUND PROTECTION (TREE 9)

Ground Protection (GP) should be installed within the TPZ in locations outside of the building footprint and maintained throughout the duration of the project.

Ground protection should consist of a layer of permeable membrane, such as geotextile fabric, beneath a 100mm thick layer of mulch.

Mulch must then be covered with a layer of strapped rumble boards (figure 4).

The final location of GP should be determined within the tree protection management plan (TPMP) once the design has been finalised and all impacts accounted for.

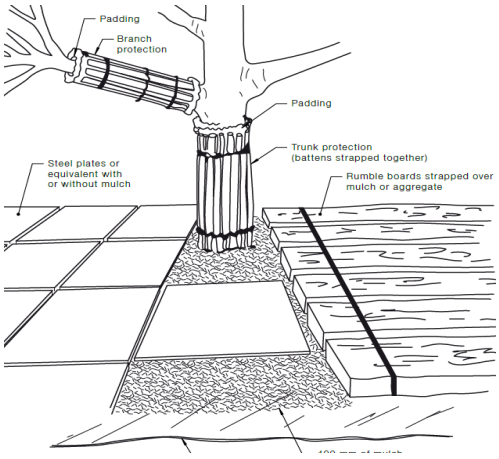


Figure 4. Ground protection (Image from AS4970-2009)

7.4.6 SCAFFOLDING

When scaffolding must be erected within the TPZ, cover the ground with a 100mm layer of mulch, and then cover this with boards and plywood to prevent soil compaction, see GROUND PROTECTION.

7.4.7 SITE STORAGE

A designated storage area where building materials, chemicals etc. can be stored should be located outside the TPZ of retained trees.

7.4.8 PROHIBITIONS WITHIN THE TPZ

The following activities are prohibited within the TPZ:

- × Machine excavation including trenching (unless approved by the Project Arborist, Arborist supervision may be required)
- × Cultivation
- × Storage
- × Preparation of chemicals, including cement products
- × Parking of vehicles
- × Refuelling
- × Dumping of waste
- × Wash down and cleaning of equipment
- × Placement of fill
- × Lighting of fires
- × Physical damage to the tree
- × Pruning or damaging of roots greater than 30mm in diameter

7.4.9 DRAINS AND SERVICES

In the event that any drains or services along with any existing proposed encroachments exceed a 10% encroachment of the TPZ or into the SRZ of tree(s) that are proposed to be retained, the following should be undertaken:

Drains or services should be installed by non-root destructive means, as follows:

- Horizontal boring of at least 600 mm in depth. Final depth should be established after consultation with the project arborist and site engineers with consideration to development needs.
- By means of low pressure pneumatic or hydro-excavation to ensure that the bark and cambium of the roots remain undamaged, unless a root investigation determines that the tree(s) would remain viable. Fine roots (<2 mm) are typically destroyed as part of this procedure but usually readily replaced by healthy trees.

Engage suitably qualified arborist (AQF Level 5) to supervise excavation for the drains and services within the TPZ.

The supervising arborist should prune any roots that are encountered in accordance with AS4373-2007 'Pruning of Amenity Trees' Section 9 with sharp, sterilised hand tools. Roots must not be mechanically cut, torn or pulled during excavation.

8 BIBLIOGRAPHY & REFERENCES

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9 LIMITATION OF LIABILITY

Information contained in this report covers the tree(s) that were examined and reflect the condition of those tree(s) at the time of inspection. There is no warranty or guarantee expressed or implied that the problems or deficiencies of the trees or property in question may not arise in the future. Trees can be managed, but they cannot be controlled. To live or work near a tree involves a degree of risk. The only way to eliminate all risks involved with a tree is to eliminate the tree.

Property boundaries and ownership, disputes between neighbours, landlord-tenant matters, and related incidents are beyond the scope of the engagement of the author and are not considered in this report.

Unless stated otherwise, there was no access to neighbouring properties, assessment is therefore limited only to parts of the trees that are visible from within the subject site and any neighbouring tree dimensions are estimated.

Unless otherwise expressed in this report, this report only applies to and only covers identifiable defects and issues present at the time of an external, visual and non-disturbance tree inspection requested by the client. It does not include an internal/invasive inspection inside the tree trunk or below the ground (i.e. a root inspection) and accordingly it is always possible that defects including decay, could remain undetected, concealed or out of reasonable view and examination.

Trees are living entities and as such are subject to the forces of nature and third-party intervention, all of which are outside the control of the author. The inspection and recommendations in this report whilst undertaken with all due care, skill and appropriate arboriculture expertise, can only apply to what is reasonably identifiable in the specific inspection requested by the client and which is the subject of this report.

Accordingly, the author cannot guarantee that the tree(s) inspected as part of this report are and will remain structurally sound and safe under all circumstances and cannot guarantee that the recommendations made in this report will categorically render the tree(s) hazard free.

The author accepts no responsibility for and cannot be held liable for:

- Any structural defects (including internal defects within the tree itself – unless part of the requested inspection) that only become reasonably apparent post the inspection contained in this report, unless they are clearly contemplated and set out in and part of, and within the time validity, of this report.
- Any damage or injury caused by any act or omission of the client in implementing or not implementing recommendations made by the author; or
- Any unforeseen weather events/conditions or any third-party intervention that impacts upon the inspected tree(s), which occurs post, the inspection contained in this report.
- Any actual or implied impacts or delay to the planning or construction of the project.
- Any costs related to amendments or changes to any planning or construction as a result of a recommendation made in this report.
- The health and structure of the tree post development.
- Any material facts which you have withheld from us when providing your instructions (whether knowingly or recklessly) which ought reasonably to have been disclosed to us as they may have had a bearing on the outcome of our findings.
- Any adverse effects as a result of the implementation of recommendations made within tree management plans produced by T&T Arboriculture (or from another arborist's report provided by you) undertaken in the capacity of Project Arborist or otherwise.

All written reports must be read in their entirety, at no time shall part of the written assessment be referred to unless taken in full context of the whole written report.

This report and its recommendations are valid as at the time of the inspection only.

10 APPENDIX

10.1 APPENDIX 1 - TREE DATA & PHOTOGRAPHIC EVIDENCE

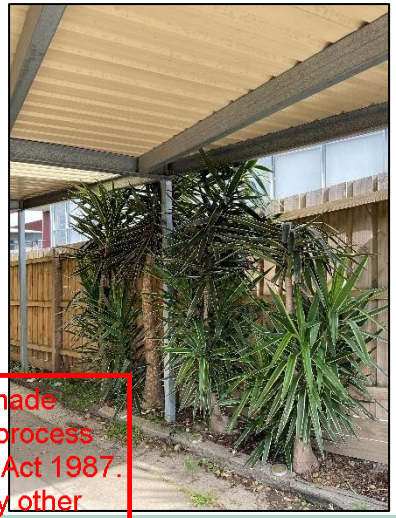
Tree No.	Botanical Name & Common Name	Age	Origin	Height	Canopy Spread	DBH CA1 DAB	Health	Structure	ULE	Amenity Value	Retention Value	TPZ Radius	SRZ Radius	Permit Required	Intent	Comments
1	*Lagunaria patersonii* Norfolk Island Hibiscus	Semi Mature	Native LH-Island N-Island	8.2 m	N-S 7.0 m E-W 5.0 m	0.33 m 0.16 m (0.36 m) 1.16 m 0.40 m	Good	Good	20+ years	Moderate	Council Owned Tree	4.3 m	2.3 m	Yes (Street Tree)	Retain	Council owned tree located within the front nature strip.
2	*Cordyline sp.* Cordyline	Young	Exotic	3.0 m	N-S 1.0 m E-W 1.0 m	0.10 m 0.35 m 0.15 m	Good	Good	5 - 10 years	Low	Low	2.0 m	N/A	No	Remove	Narrow planting area. TPZ adjusted in accordance with section 3.2 of AS4970-2009. SRZ not required in accordance with section 3.3.5 of AS4970-2009.
3	*Yucca elephantipes* Spineless Yucca	Semi Mature	Exotic	3.0 m	N-S 2.0 m E-W 2.0 m	NA	Good	Good	5 - 10 years	Low	Low	2.0 m	N/A	No	Remove	Many stems, TPZ has been estimated. Narrow planting area. TPZ adjusted in accordance with section 3.2 of AS4970-2009. SRZ not required in accordance with section 3.3.5 of AS4970-2009.
4	*Yucca elephantipes* Spineless Yucca	Semi Mature	Exotic	3.0 m	N-S 1.0 m E-W 1.0 m	0.10 m 0.38 m 0.18 m	Fair	Fair	5 - 10 years	Low	Low	2.0 m	N/A	No	Remove	Narrow plantings area. TPZ adjusted in accordance with section 3.2 of AS4970-2009. SRZ not required in accordance with section 3.3.5 of AS4970-2009.
5	*Yucca elephantipes* Spineless Yucca	Semi Mature	Exotic	3.8 m	N-S 1.0 m E-W 1.0 m	0.13 m 0.47 m 0.28 m	Good	Good	5 - 10 years	Low	Low	2.0 m	N/A	No	Remove	2 trees of the same species; largest has been measured adjusted in accordance with section 3.2 of AS4970-2009. SRZ not required in accordance with section 3.3.5 of AS4970-2009.

Tree No.	Botanical Name & Common Name	Age	Origin	Height	Canopy Spread	DBH CA1 DAB	Health	Structure	ULE	Amenity Value	Retention Value	TPZ Radius	SRZ Radius	Permit Required	Intent	Comments
6	*Yucca elephantipes* Spineless Yucca	Semi Mature	Exotic	3.0 m	N-S 1.0 m E-W 1.0 m	0.10 m 0.31 m 0.16 m	Good	Good	5 - 10 years	Low	Low	2.0 m	N/A	No	Remove	TPZ adjusted in accordance with section 3.2 of AS4970-2009. SRZ not required in accordance with section 3.3.5 of AS4970-2009.
7	*Archontophoenix cunninghamiana* Bangalow Palm	Semi Mature	Native NSW QLD	7.0 m	N-S 3.0 m E-W 3.0 m	0.15 m 0.17 m (0.22 m) 0.50 m 0.60 m (1.10 m) 0.40 m	Fair	Fair	10 - 20 years	Low	Low	2.5 m	N/A	No	Remove	Consists of 2 stems. TPZ adjusted in accordance with section 3.2 of AS4970-2009. SRZ not required in accordance with section 3.3.5 of AS4970-2009.
8	*Citrus x limon* Lemon	Semi Mature	Exotic	3.0 m	N-S 2.0 m E-W 2.0 m	0.05 m 0.06 m (0.07 m) 0.25 m 0.12 m	Fair	Fair	5 - 10 years	Low	Low	2.0 m	1.5 m	No	Remove	
9	*Pittosporum undulatum* Sweet Pittosporum	Semi Mature	Native NSW QLD VIC	3.4 m	N-S 2.0 m E-W 2.0 m	0.06 m 0.06 m 0.05 m (0.09 m) 0.25 m 0.19 m (0.44 m) 0.15 m	Good	Good	10 - 20 years	Low	Neighbouring Tree	2.0 m	1.5 m	No	Retain	Neighbouring tree located within the eastern adjoining property (2 Maxine Court).
10	*Corymbia citriodora* Lemon-scented Gum	Semi Mature	Native NSW QLD	18.0 m	N-S 13.0 m E-W 16.0 m	0.65 m 2.07 m 0.75 m	Good	Good	20+ years	High	Neighbouring Tree	7.8 m	2.9 m	Yes - Local law	Retain	Neighbouring tree located within the southern adjoining property (Yarraman Park Primary School, 27 Liege Ave).

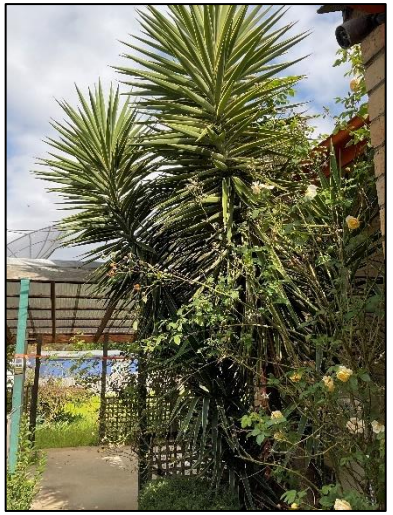
TREE 1

TREE 2

TREE 3



TREE 4



TREE 5

TREE 6

TREE 7

TREE 8

TREE 9

TREE 10

EXISTING CROSSOVER VIEWED FROM THE WEST

EXISTING DRIVEWAY VIEWED FROM THE WEST

FRONT YARD VIEWED FROM THE SOUTH

REAR YARD VIEWED FROM THE WEST

10.2 APPENDIX 2 - DEFINITION OF TERMS

The following descriptors are used as indicators only. Other factors may be used in assessing an individual tree health, structure, ULE, retention value and amenity value.

10.2.1 TREE DATA TABLE

DBH: Diameter at Breast Height (1.4 meters from ground level)

DAB: Diameter At Base of tree

CA1: Circumference of trunk At 1 meter from ground level

TPZ: Tree Protection Zone

SRZ: Structural Root Zone

10.2.2 TREE HEALTH

GOOD

The tree is demonstrating good or exceptional growth for the species. The tree should exhibit a full canopy of foliage and have only minor pest or disease problems. Foliage colour size and density should be typical of a health specimen of that species.

FAIR

The tree is in reasonable condition and growing well for the species. The tree should exhibit an adequate canopy of foliage. There may be some dead wood in the crown, some grazing by insect or animals may be evident, and/or foliage colour, size or density may be atypical for a healthy specimen of that species.

POOR

The tree is not growing to its full capacity. Extension growth of the laterals may be minimal. The canopy may be thinning or sparse. Large amounts of dead wood may be evident throughout the crown, as well as significant pest and disease problems. Other symptoms of stress indicating tree decline may be present.

VERY POOR

The tree appears to be in a state of decline, and the canopy may be very thin and sparse. A significant volume of dead wood may be present in the canopy, or pest and disease problems may be causing a severe decline in tree health.

DEAD

The tree is no longer alive.

10.2.3 STRUCTURE

The definition of structure is the likelihood of the tree to fail under normal condition. A tree with good structure is highly unlikely to suffer any significant failure, while a tree with poor to very poor structure is likely or very likely to fail.

GOOD

The tree has a well-defined and balanced crown. Branch unions appear to be strong, with no defects evident in the trunks or the branches. Major limbs are well defined. The tree would be considered a good example for the species. Probability of significant failure is highly unlikely.

FAIR

The tree has some minor problems in the structure of the crown. The crown may be slightly out of balance at some branch unions or branches may be exhibiting minor structural faults. If the tree has a single trunk, this may be on a slight lean, or be exhibiting minor defects. Probability of significant failure is low.

POOR

The tree may have a poorly structured crown, the crown may be unbalanced, or exhibit large gaps. Major limbs may not be well defined; branches may be rubbing or crossing over. Branch unions may be poor or faulty at the point of attachment. The tree may have suffered major root damage. Probability of significant failure is moderate.

VERY POOR

The tree has a poorly structured crown. The crown is unbalanced or exhibits large gaps. Major limbs are not well defined. Branch unions may be poor or faulty at the point of attachment. A section of the tree has failed or is in imminent danger of failure. Active failure may be present, or failure is probably in the immediate future.

Failed: A significant section of the tree or the whole tree has failed.

10.2.4 USEFUL LIFE EXPECTANCY (ULE)

Useful life expectancy is approximately how long a tree can be retained safely and usefully in the landscape providing site conditions remain unchanged and the recommended works are completed. It is based on the principals of safety and usefulness in the landscape and should not reflect personal opinions on species suitability.

UNSAFE OR 0 YEARS

The tree is considered dangerous in the location and/or No longer provides any amenity value.

LESS THAN 5 YEARS

The tree under normal circumstances and without extra stress should be safe and have value of maximum of 5 years. The tree will need to be replaced in the short term. Replacement plants should be established as soon as possible if there is efficient space, or consideration should be given to the removal of the tree to facilitate replanting.

5 TO 10 YEARS

The tree under normal circumstances and without extra stress should be safe and have value of maximum of 10 years. Trees in this category may require regular inspections and maintenance particularly if they are large

specimens. Replacement plants should be established in the short term if there is sufficient space, or consideration should be given to the removal of the tree to facilitate replanting.

10 TO 20 YEARS

The tree under normal circumstances and without extra stress should be safe and of value of up to 20 years. During this period, regular inspections and maintenance will be required.

20 + YEARS

The tree under normal circumstances and without extra stress should be safe and of value of more than 20 years. During this period, regular inspections and maintenance will be required.

10.2.5 TREE RETENTION VALUE

HIGH

The tree may be significant in the landscape, offer shade and other amenities such as screening. The tree may assist with erosion control, offer a windbreak or perform a vital function in the location (e.g. habitat, shade, flowers or fruit). The tree is free from structural defects and is vigorous. Consider the retention of the tree and designing the development to accommodate the tree.

MODERATE

The tree may offer some screening in the landscape or serve a particular function in the location and have minor structural defects. The tree may be entering the mature stage of its life cycle. The tree may be retained if it does not hamper the design intent.

LOW

The tree offers very little in the way of screening or amenity and may have significant structural defects. The tree may also be mature and entering the senescent stage of its life cycle. The tree may be removed if necessary.

NEIGHBOURING TREE

The tree is located within an adjoining private property/land. The tree is to be protected unless written consent from the tree owner(s) and/or responsible authority is obtained. Consider the retention of the tree unless written consent is obtained from the tree owner and/or responsible authority.

COUNCIL OWNED TREE

The tree is located within Council owned land. The tree is to be protected unless written consent from the responsible authority is obtained. Consider the retention of the tree unless written consent is obtained from the tree owner and/or responsible authority.

10.2.6 AGE

YOUNG: Juvenile or recently planted.

SEMI MATURE: Tree actively growing.

MATURE: Tree has reached expected size in situation.

SENESCENT: Tree is over mature and has started to decline.

10.2.7 AMENITY VALUE

The amenity value rating considered the impact that the tree has on any neighbouring sites as being equally important to that supplied to the subject site. However, trees that contribute to the general area (e.g. streetscape) are given a greater weight.

VERY LOW

Tree makes little or no amenity value to the site or surrounding areas. In some cases, the tree might be detrimental to the area's amenity value (e.g. unsightly, risk of weed spread)

LOW

Tree makes some contribution of amenity value to the site but makes no contribution to the amenity value of surrounding areas. The removal of the tree may result in little loss of amenity. Juvenile trees, including street trees are generally included in this category. However, they may have the potential to supply increased amenity in the future.

MODERATE

The tree makes a moderate contribution to the amenity of the site and/or may contribute to the amenity of the surrounding area.

HIGH

The tree makes a significant contribution to the amenity value of the site, or the tree makes a moderate contribution to the amenity value of the larger landscape.